

REMARKS

Claims 1, 4, 5, 6, 9, 10 and 11 have been herein canceled without prejudice. New claims 14 and 15 have been entered, and claims 2, 7, 8, 12, and 13 have been amended.

The only independent claim in the application, claim 14, is directed toward a method of treating a semi-permeable filter of the type adapted for separation of salt from an aqueous solution or dispersion. Support for this claim may be seen throughout the specification and specifically in conjunction with Example 2 thereof which reports the salt rejection and flow studies that were undertaken. Further, in accordance with claim 14, the aqueous solution or dispersion is of the type that is prone to the formation of calcium phosphate precipitate therein. This finds full support again throughout the specification and specifically in conjunction with Examples 3-5. The claim further indicates that the method comprises contacting the filter membrane with the aqueous solution or dispersion and admitting to the aqueous solution or dispersion an effective amount of a treatment agent selected from the group consisting of AA/APES, AA/PEGAE and AA/1-allyloxy-2,3 propanediol and mixtures thereof. (See paragraph [0022] for an explanation of the polymer acronyms employed).

Further, the claim indicates that utilization of the treatment does not adversely affect salt rejection of the membrane and throughput of the aqueous solution or dispersion therethrough. This portion of the claim finds full support at paragraphs [0005] and [0006] of the specification as well as in Example 2, particularly paragraph [0033] thereof.

Species claims directed toward specific members of the Markush grouping now set forth in claim 14 are set forth in claims 15, 12, and 13.

All of the claims stand rejected on art-based ground with certain of the claims indicated as being anticipated by Chen et al. 6,444,747. Other claims stand rejected as being obvious in light of Chen et al. in view of Amjad 4,895,658 and Kessler 6,099,755.

Turning first to the '747 Chen et al. patent, to be sure, this discloses the utilization of water soluble copolymers such as the AA/APES copolymers in a variety of cooling, boiler, steam generating, and other systems to inhibit deposition of certain scale forming moieties. As the

Examiner notes, the specification indicates that the copolymers may be used to prevent fouling on membranes used in the microfiltration, ultrafiltration, and reverse osmosis applications (see column 5, lines 63-64). However, nowhere in the application is there any suggestion that any particular polymer disclosed in the '747 would effectively function to inhibit calcium phosphate precipitation while not adversely affecting salt rejection through the membrane and throughput through the membrane. As may be seen upon review of the examples herein, it is truly surprising that the polymer treatments herein set forth in the claim exhibit calcium phosphate inhibition while not adversely affecting said rejection and system throughput. These examples demonstrate the unexpected nature of the invention and rebut any *prima facie* showing of obviousness that could be made by the Examiner.

An artisan, after a close reading of the '747, may be tempted to try one of the myriad polymers reported therein to see if that particular polymer was successful in functioning as now claimed in independent claim 14, to wit, to inhibit calcium phosphate precipitation while not adversely rejecting the salt rejection or throughput characteristics of the membrane. However, it is noted that "obvious to try" is not the proper standard to be utilized in measuring the standard of invention under 35 USC §103.

The patent to Amjad 4,895,658 does not cure any of the deficiencies of the primary '747 Chen et al. patent. That is, this reference does not teach the utilization of any of the polymers now set forth in the Markush grouping in claim 14 to treat an RO membrane and inhibit calcium phosphate precipitation in the system water while not adversely affecting salt rejection of the membrane and throughput therethrough.

The Kessler et al. '755 reference is directed toward the inhibition of scale and corrosion in cooling water systems. There is no hint or suggestion in this reference directed toward utilization of the specific polymers now set forth in claim 14 in an RO membrane containing system wherein the treatment agent is effective in inhibiting calcium phosphate precipitation while not adversely affecting salt rejection. Indeed, it is noted that the AA/AHPSE polymer preferred for use in conjunction with the '755 reference (see column 4, lines 32-33) performs quite poorly in the

Serial No. 10/663,585

-6-


calcium phosphate inhibition tests reported graphically in Fig. 5 of the specification and discussed in paragraphs [0038] and [0045] of the specification. This highlights the surprising, unexpected results that are attendant upon practice of the instantly claimed invention.

For all of the above reasons, it is respectfully submitted that the solicited claims define patentable subject matter in compliance with the statutes. The prompt issuance of a Notice of Allowance is accordingly solicited.

The Examiner is invited to call the undersigned if, during the course of reconsideration of this application, any question or comment should arise.

Respectfully submitted,

WEGMAN, HESSLER & VANDERBURG

By 

Bruce E. Peacock
Reg. No. 28,457

Suite 200
6055 Rockside Woods Boulevard
Cleveland, Ohio 44131
216.642.3342

April 7, 2006